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## Article

# Redescription of the little known species, *Ralphaudyna iranensis* (Acari: Chyzeriidae)

Javad Noei[1*], Alireza Saboori[2] & Jalil Hajizadeh[1]

*1 Department of Plant Protection, College of Agricultural Sciences, University of Guilan, P.O. Box 41635-1314, Rasht, Iran; e-mails: noei.javad@gmail.com; hajizadeh @guilan.ac.ir*

*2 Department of Plant Protection, College of Agriculture, University of Tehran, Karaj, Iran; e-mail: saboori@ut.ac.ir*

*Corresponding author

**Abstract**

Larvae of *Ralphaudyna iranensis* Zhang & Saboori, 1995 are collected ectoparasitic on *Lophopilio palpinalis* (Herbst, 1799) (Arachnida: Opiliones, Phalangiidae) and from soil (off host) in a forest in Masooleh, Roodbar, Hashtpar, Rasht and Astara cities, Guilan province, Iran and also from grasshopper (Orthoptera: Acrididae) in Abbas Aabad region, Behshahr city, Mazandaran province, Iran. This paper presents new morphological data for *R. iranensis*.

**Key words:** Parasitengona, Trombidiformes, Prostigmata, *Lophopilio palpinalis*, ectoparasite, Iran.

## Introduction

Welbourn (1991) revised the concept of Chyzeriidae and divided it into three subfamilies in the expanded Chyzeriidae: Chyzeriinae Womersley, 1954, Pteridopodinae Southcott, 1987 and Ralphaudyninae Southcott, 1987. Haitlinger (1999) created a new monotypic subfamily, Perumaroptinae which was considered as a junior synonym of Chyzeriinae by Saboori *et al*. (2005). All these three subfamilies have been reported from Iran (Zhang and Saboori 1995; Saboori and Nemati 2003; Saboori *et al.* 2005; Saboori and Lazarboni 2007; Seiedy *et al*. 2009). The genus *Ralphaudyna* previously only known from Japan (Vercammen-Grandjean *et al.* 1974), was recorded for the first time from Iran based on single larva and described as *R. iranensis* by Zhang and Saboori (1995), collected in a pitfall trap and its host was unknown. In this paper, we present new morphological data and new hosts for *R. iranensis*.

## Material and Methods

Thirty one specimens were extracted by a Berlese' funnel or detached from their hosts by an insect pin under the stereomicroscope. The specimens were cleared in Nesbitt's

fluid, mounted on a glass microscopic slide using Hoyer's medium (Walter & Krantz 2009). Figures were drawn and measurements (given in micrometers) made using a BX-51 phase contrast Olympus microscope equipped with a drawing tube. The terminology and abbreviations follow Robaux (1974) except "n" for leg setal formula which means normal seta.

## Result

### *Ralphaudyna iranensis* Zhang & Saboori, 1995

*Diagnosis*

Larva with the following features: fnCx = 2-1-1; fnTr = 1-1-1; fnFe = 6-7-6; fnGe = 4-4-4; fnTi = 6-6-6; fnTa = (25−28)-(23−25)-(17−19); fSol = I (0-4-2-1), II (0-3-2-1), III (0-3-1-0); fκ = I (1-1), II (1-0), III (0-0); fζ = 2-1-0; fε = 1-1-0; fPp = 0-BB-B-$BBB_2$-NNNNNω.

*Morphological characters* (N = 31)

*Dorsum of idiosoma.* Dorsal surface with a scutum, a pair of ocular sclerites and 26 dorsal setae. Scutum triangular in shape, punctuate, with four pairs of setae. AM setae barbed, sensillary; PL setae barbed, situated at postero-lateral corners of the scutum; AL setae barbed, positioned between AM and PL setae; S completely barbed, long and thin, situated postero-medially to AL setae. Ocular sclerites situated laterally to postero-lateral angles of scutum; with two eyes, anterior eye (12−17 μm) smaller than the posterior one (15−20 μm). All dorsal setae barbed, each arising from a small punctate plate (Fig. 5); dorsal setal formula (fD) = 6-6-6-6-2.

*Venter*. Ventral surface with three pairs of coxae, one pair of intercoxal setae between coxae III, 18−20 ventral setae, and an anus. Each ventral idiosomal seta situated on a small punctate plate. Coxa I with two setae. Coxae II and III each with one seta. Coxal setae barbed, thick and tapering and pointed (Fig. 2). Intercoxal setae barbed, between coxae III. Ventral setae barbed (Fig. 4). A pair of anal valves present, each valve with two barbed setae.

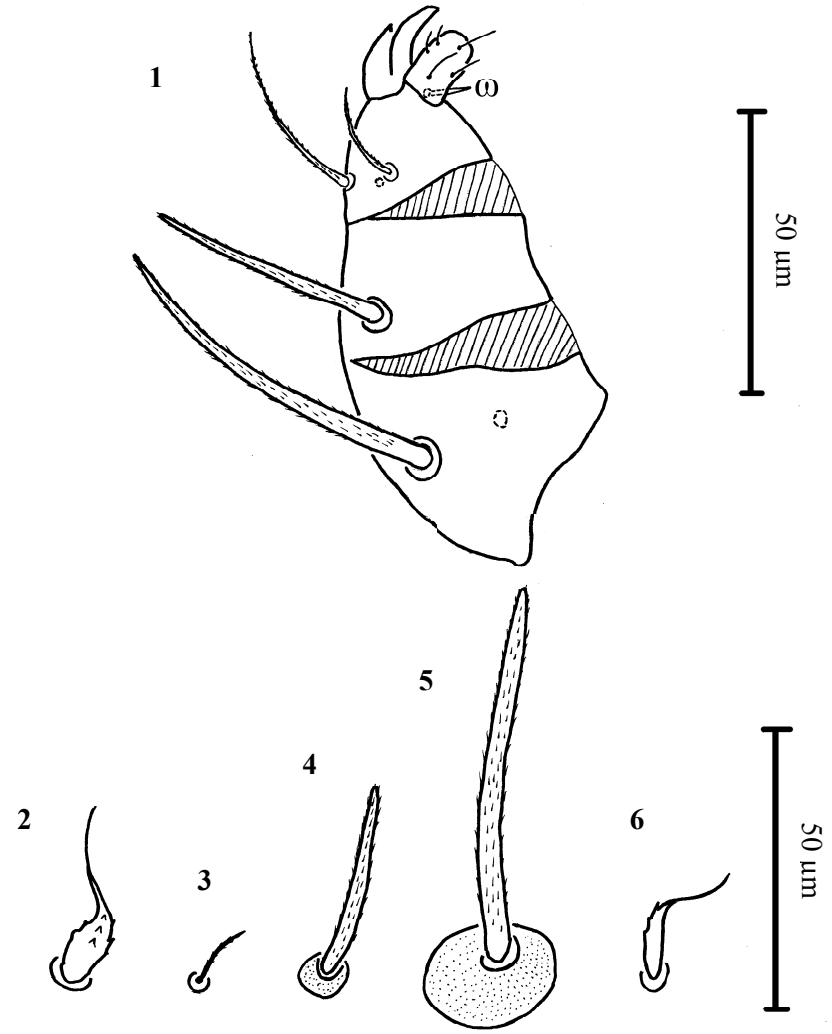
*Gnathosoma*. Palpal femur with two barbed setae (one dorsal (54−69) and one ventral (27−37)); genu with one barbed seta (45−50). Tibia with three barbed setae and a bifid tibial claw. Palpal tarsus with six setae including a solenidion and five nude setae (Fig. 1). Palpal setal formula (fPp) = 0-BB-B-$BBB_2$-NNNNNω. A pair of barbed adoral setae (Fig. 3) present, 8−12 long. A pair of barbed subcapitular setae (Fig. 6) present, 25−32 long, similar to coxal setae in structure. Cheliceral blade curved, with one subterminal tooth.

*Legs*. Segmentation formula (fSp) = 7-7-7 (femur divided). All legs with two lateral claws and a foliate empodium. All setae on legs barbed.

Leg setal formula: Leg I: Ta- 1ω, 1ε, 2ζ , 1Cp, 25−28n; Ti- 2φ, 1κ, 6n; Ge- 4σ, 1κ, 4n; TFe- 5n; BFe- 1n; Tr- 1n. Leg II: Ta- 1ω, 1ζ, 1 ε, 23−25n; Ti- 2φ, 6n; Ge-3σ, 1κ, 4n; TFe- 5n, BFe- 2n; Tr- 1n. Leg III: Ta- 17−19n , Ti- 1φ, 6n; Ge- 3σ, 4n; TFe- 4n, BFe- 2n; Tr- 1n.

IP = 1186−1287

Measurements are given in Table 1.




**Figures 1–6.** *Ralphaudyna iranensis* (larva). 1. Dorsal view of palp; 2. Coxal seta; 3. Adoral seta; 4. Ventral idiosomal seta; 5. Dorsal idiosomal seta; 6. Subcapitular seta.

*Material examined*

Eighteen specimens collected as ectoparasite of *Lophopilio palpinalis* (Herbst, 1799) (Opiliones, Phalangiidae), 19 June 2010 and five specimens, 2 July 2011, the same host, in Masooleh city; one specimen collected as ectoparasitic of *L. palpinalis*, 12 June 2011 in Noghlehbar village, Roodbar city; one specimen collected on soil (off host) in a forest, 10 June 2010 in Gijave village, Asalem city; one specimen collected on soil (off host) in a forest, 22 April 2010 in Saravan forest, Rasht city; two specimens collected on soil (off host) in a forest, 21 July 2010 and two specimens, 29 June 2011 in Kashfi village, Astara city, all from Guilan province, Northern Iran. One specimen collected by Mahsa Samanipour as ectoparasite of an unidentified grasshopper

(Orthoptera: Acrididae), 24 June 2011 in Abbas Aabad region, Behshahr city, Mazandaran province, Northern Iran. Ten specimens are deposited in the Acarological collection, Jalal Afshar Zoological Museum, College of Agriculture, University of Tehran, Karaj, Iran; five specimens are deposited in the Acarological collection, Department of Plant Protection, College of Agriculture, University of Guilan, Iran and five specimens will be deposited in Natural History Museum of Erfurt, Erfurt, Germany, five specimens are deposited in the Acarological collection, The Acarological Society of Iran and six specimens are deposited in authors' collection.

**Table 1**. Metric data for *R. iranensis* larvae.

| Character | from Guilan (n = 30*) | from Mazandaran (n = 1) | Zhang & Saboori (1995) | Character | from Guilan (n = 30) | from Mazandaran (n = 1) | Zhang & Saboori (1995) |
|---|---|---|---|---|---|---|---|
| IL | 285–921 | 483 | 381 | BFe I | 37−45 | 47 | 41 |
| IW | 205–681 | 371 | 276 | TFe I | 35–42 | 42 | 36 |
| SD | 111–141 | 126 | 120 | Ge I | 40–45 | 47 | 41 |
| W | 131–153 | 146 | 144 | Ti I | 50–57 | 54 | 59 |
| AW | 50–62 | 62 | 66 | Ta I (L) | 114–131 | 126 | 115 |
| PW | 114–146 | 119 | 128 | Ta I (H) | 35–40 | 30 | - |
| AA | 15–20 | 17 | 18 | Leg I | 399–438 | 440 | 409 |
| SB | 20–25 | 25 | 21 | Cx II | 67–82 | 82 | - |
| ASB | 79–104 | 92 | 77 | Tr II | 37–50 | 42 | 36 |
| PSB | 30–45 | 35 | 43 | BFe II | 35–50 | 42 | 41 |
| MA | 30–37 | 37 | 38 | TFe II | 35–40 | 42 | 35 |
| AP | 45–54 | 50 | 54 | Ge II | 32–40 | 42 | 36 |
| AL | 45–59 | 50 | 68 | Ti II | 42–50 | 47 | 49 |
| PL | 59–69 | 59 | 68 | Ta II (L) | 111–124 | 121 | 108 |
| AM | 47–57 | - | 52 | Ta II (H) | 27–37 | 30 | - |
| S | 92–109 | - | 101 | Leg II | 379–411 | 418 | 381 |
| DS | 37–82 | 42-69 | - | Cx III | 64–79 | 69 | - |
| PDS | 50–71 | 67 | - | Tr III | 45–52 | 45 | 46 |
| *1a* | 22–30 | - | - | BFe III | 42–50 | 50 | 41 |
| *1b* | 25–30 | - | - | TFe III | 40–45 | 45 | 38 |
| *2b* | 27–35 | - | - | Ge III | 35–42 | 45 | 38 |
| *3a* | 45–54 | 54 | - | Ti III | 45–54 | 52 | 54 |
| *3b* | 22–30 | - | - | Ta III (L) | 131–144 | 141 | - |
| *or* | 8–12 | 10 | - | Ta III (H) | 22–32 | 27 | - |
| *Sc* | 25–32 | - | - | Leg III | 401–442 | 447 | 433 |
| Cx I | 74–84 | 87 | - | IP | 1186–1287 | 1305 | 1224 |
| Tr I | 37–47 | 37 | 27 | | | | |

* except for AM & *or* which was 29, for S & *2b* 28, for *Sc*, *1b* & *3b* 26 and for *1a* 25.

*Remarks*

Finding some specimens help us to augment and correct the original description of *R. iranensis*. Zhang and Saboori (1995) mentioned all dorsal, ventral, adoral setae and all setae on legs are nude whereas all setae are barbed and number of setae on palpal tarsus is clear now and range of metric and meristic data is given.

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## بازتوصیف گونهٔ کم شناختهٔ *Ralphaudyna iranensis* (Acari: Chyzeriidae)

### چکیده

لاروهای گونهٔ *Ralphaudyna iranensis* Zhang & Saboori, 1995 به صورت انگل بیرونی *Lophopilio palpinalis* (Herbst, 1799) (Arachnida: Opiliones, Phalangiidae) و از روی خاک (بدون میزبان) در جنگلی در شهرهای ماسوله، رودبار، هشتپر، رشت و آستارا از استان گیلان و همچنین از روی ملخ شاخک کوتاه از منطقه عباس‌آباد بهشهر از استان مازندران جمع‌آوری شدند. در این مقاله اطلاعات ریخت‌شناسی جدیدی برای این گونه ارایه شده است.

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